EVALUATION OF ATMOSPHERIC CORRECTION AND CHLOROPHYLL ALGORITHMS FOR PROCESSING SEAWIFS DATA*

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ABSTRACT

Producing chlorophyll imagery from SeaWiFS data requires both an atmospheric correction and a chlorophyll algorithm. We know of at least 6 atmospheric corrections and 5 chlorophyll algorithms. Even with a valid chlorophyll algorithm, an inappropriate atmospheric correction can lead to invalid results. Applied scientists and managers may not always use a chlorophyll algorithm that generates the best available satellite product for their areas of interest, and would not be able to evaluate the validity of the atmospheric correction. The objective of this study is to determine the best overall global atmospheric correction and the best overall regional chlorophyll algorithms for different coastal regions of the US. We used 159 same-day field-satellite pairs of remote sensing reflectance spectra to determine the best atmospheric correction applicable to the entire US coastline; and 124 same-day field-satellite pairs of chlorophyll to determine the most appropriate regional chlorophyll algorithms. The field measurements were obtained from NOAA coops and NASA SIMBIOS database (Sensor Intercomparison and Merger for Biological and Interdisciplinary Oceanic Studies). The selection procedure is designed to determine an algorithm that works best over a range of water types, and compensates for local variability. Our results indicate a NOAA atmospheric correction estimated the best overall accurate remote sensing reflectance. Different algorithms apply to chlorophyll: NOAA chlorophyll algorithm for US Gulf of Mexico and Southeast, and central Gulf of Maine; NASA OC2V2, for California.

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